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April 1989

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P-7558

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CANADIAN AND U.S. DEFENSE PLANNING TOWARD THE ARCTIC*

Suzanne Holroyd

As Oran Young wrote a few years ago in *Foreign Policy*, this is "The Age of the Arctic"¹ and it is becoming increasingly so. The North is quickly becoming industrialized through oil and mineral exploration. In addition, the region has received increased attention from the military community because of its growing strategic importance to all nations bordering the region. Improvements in military technology now allow for operations over, on, and under the ice of the Arctic Ocean.

These technology improvements have occurred within both the East and West Blocs. In terms of under-ice operations alone, the Soviet Union has a growing force of submarines capable of such activity. The United States is also equipped to operate in those conditions, and until recently, Canada was also making movements toward acquiring those capabilities.

As a region grows in economic and military significance, the discussion inevitably turns to management of the region, and not surprisingly, this debate has become a central point of discourse between the United States and Canada. These two countries have a long history of cooperation on managing the threat posed by Soviet air and surface forces, but each country has taken its own path to addressing the subsurface naval threat. As will be discussed below, the growing nature of the subsurface threat coupled with American and Canadian limitations in defense spending suggest the need for cooperative research and deployment of a subsurface monitoring system. The United

*Note: A version of this paper was presented by the author at the Western Social Science Association Annual Conference, Canadian Studies Section, Panel on Canada's Role in World Affairs, April 29, 1989, Albuquerque, New Mexico.

¹ Oran Young, "The Age of the Arctic," *Foreign Policy*, 1985-86, Volume 61.

States and Canada would be wise to take note that "the Soviets speak of the (Arctic) region's 'exceptionally important military-strategic value'"² and make adequate preparations to face the challenge.

NATURE OF THE THREAT

The following map of the polar projection helps illustrate why the Arctic Ocean is becoming an area of increasing strategic importance for air, sea, and land operations. The air threat becomes of concern since, as shown by the map, the polar route is the shortest distance for Soviet ICBMs and intercontinental bombers directed toward North America. The sea threat in the Arctic arises from both surface and subsurface vessels. For example, improvements in Soviet nuclear submarine technology now allow for these boats to either use the Arctic Ocean as a protective bastion or as a secure firing location. Further, the Arctic Ocean offers access routes into the northern waters of both the Atlantic and the Pacific. Access to the northern Atlantic can be gained through the Greenland-Iceland-United Kingdom (GIUK) gap running along Norway, or south through the Davis Strait on the western side of Greenland east of Canada. To reach the Pacific, vessels must move through the Bering Strait separating Alaska and the Soviet Union. In a protracted NATO conflict, defense of the Sea Lines of Communication (SLOCs) connecting North American and NATO theaters will become critical to NATO's success, and thus, the interruption of those SLOCs will be a major objective of the Soviet naval forces.

Of the three threats posed by the Soviets to North America, it appears that the least likely to occur is a land attack on North American territory by Soviet troops. Several scenarios suggest this would be one way for the Soviets to divert American and Canadian attention from a European conflict since such an attack would require the redirection of trans-Atlantic deployment and resupply routes.³

² Charles C. Petersen, "Soviet Military Objectives in the Arctic Theater," *Naval War College Review*, Autumn 1987, p.3.

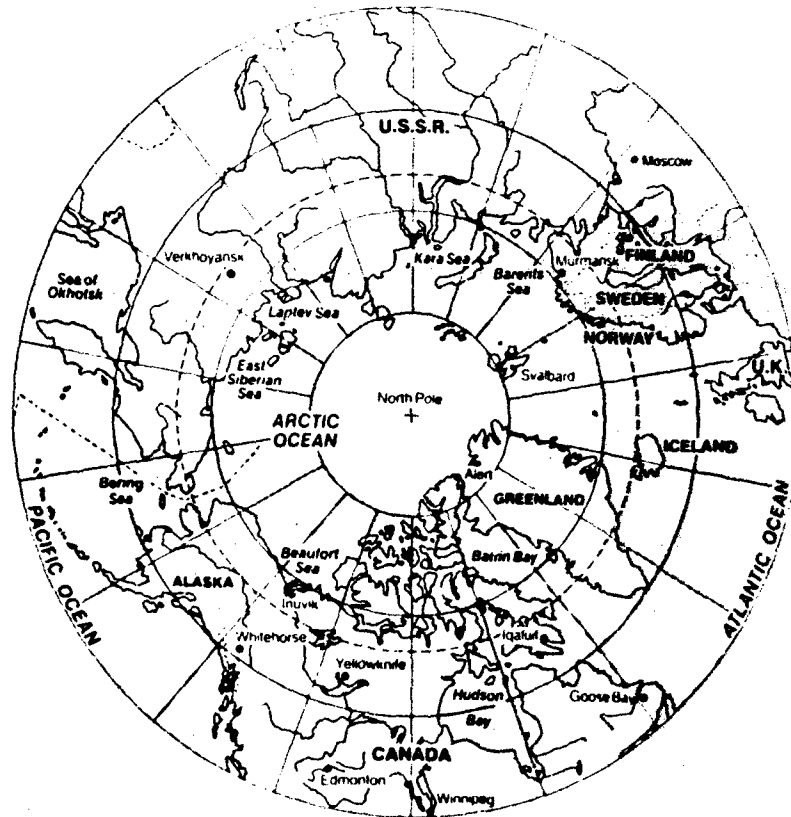
³ Such a scenario is offered by Commander Dennis M. Egan and Major David W. Orr, "Sea Control in the Arctic: A Soviet Perspective," *Naval War College Review*, Winter 1988, pp. 51-60.

However, most military experts view such a scenario as very unlikely given the logistical nightmare it would present any force operating in that region. Problems presented by temperatures* and the distances to be overcome to establish the needed logistical support links are judged to exceed the limited benefits of attacking the few targets (such as oil installations) in the northern region. Air defense stations could be fruitful targets of such an attack, but the Soviets have air assets available to accomplish the same task.

* Recent American and Canadian training exercises (called Brim Frost) encountered many of the difficulties presented by extremely low temperatures, such as metal and rubber fatigue. ("Canada, After Losing Eight, Withdraws From Exercise," *Washington Times*, 31 January 1989, p.6)



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The circumpolar world

SOURCE: John Honderich, Arctic Imperative: Is Canada Losing the North? p. 10.

SOVIET BUILDUP ON THE KOLA PENINSULA

The other two threats posed by forces operating in the air and water are receiving increasing attention because of the continuing buildup of the Soviet Northern Fleet located on the Kola Peninsula, making it one of the largest military basing areas in the world. The military facilities in the Kola region now include two main SSBN bases, two strategic bomber bases, 22 main airbases with hardened aircraft shelters, two strategic early warning and target acquisition radar complexes, and approximately 70% of the Soviet strategic air defense complexes.⁵ In terms of only submarines, in 1985, 66% of the Soviets' SSBN force was stationed on the Kola. Further, 100% of the newest nuclear subs, the *Typhoon* and the *Delta IV*, are located in that area.⁶ And apparently this buildup is not slowing: "New and more powerful warships have been added to the Soviet Northern Fleet, indicating there has been no reduction in the Soviet military buildup in the North."⁷ The obvious result is the increasing strategic importance of the Kola Peninsula due to this force concentration.

This increase in force concentration has occurred in part due to "the proximity, and suitable transit possibilities, of the Kola to the Arctic waters."⁸ However, while the Soviets have other major military naval facilities, their operations off the Kola are unique due to the nature of the Arctic waters. The edges of the Arctic Ocean are ringed with countless islands, and there is no land mass at the center of this water body. Instead, the ocean depths near the North Pole reach down to as much as 5000 meters and are covered in a permanent ice pack augmented by partial ice coverage in nearby areas throughout many months of the year. In addition, the water movement in the Arctic is influenced by the currents from the Atlantic and Pacific Oceans, as well as the Earth's rotation.⁹

⁵ Tomas Ries and Johnny Skorve, *Investigating Kola: A Study of Military Bases Using Satellite Photography*, p 3.

⁶ Ibid., p. 26.

⁷ "Julian Isherwood, "Norwegians Eyeing Soviet Naval Buildup in Kola Region," *Armed Forces Journal*, March 1989, p. 44.

⁸ Ries and Skorve, p. 26.

⁹ Captain T.M. Le Marchand, "Under Ice Operations," *Naval War College Review*, May-June, 1985, p. 19.

As the water freezes, it is continually rotating and colliding against other ice or land masses resulting in fractures in the ice known as "rafts." These collisions result in breaks in the ice exposing open water, or they cause the raft to shift and then freeze into a vertical position either above or below the water. These two different reactions lead to widely differing depths in the ice. Where open water is exposed and immediately freezes, the depth of the ice can be as little as one foot, and in the other extreme, where ice rafts are moved into a vertical position, they can reach as much as 200 feet down into the ocean.¹⁰ In addition to ice rafts, the waters are littered with icebergs which can reach 250 feet above the surface and extend 1200 feet below the water line.¹¹ In the open areas of the ocean, such obstacles can be avoided, but their presence in the narrow and shallow Davis Strait can greatly complicate movement around or under them.

The ice and unique water conditions present in the Arctic Ocean work together to complicate both submarine detection and operation due to three factors. First, the salinity differences resulting from several different temperature layers cause acoustical refraction to the point that unless the operating and detecting devices are in almost the same thermolayer, detection is very difficult. Second, the Arctic waters are much "noiser" than other oceans because of the shifting and breaking of ice which can add acoustical cover against listening devices. Some, but not all, of this "natural" noise can be filtered out by the more sophisticated sensors. Finally, the ice itself presents an obstacle to overhead or surface ASW efforts; a situation which can clearly be used to the advantage of submarines, on one hand, but which also complicates operations since even nuclear submarines must eventually surface to communicate, confirm a location, and fire missiles.

¹⁰ Ibid., p. 21. The open rifts which refreeze are known as "polynas", and the rafts refrozen into vertical positions are known as "keels" (below the water) or "sails" (above the water).

¹¹ Ibid.

Ironically, it has been the advancements in American ASW capabilities that apparently forced the Soviet SSBN force into the unique waters of the Arctic. Prior to the introduction of the long-range intercontinental SLBMs, the shorter range missiles demanded that the Soviet submarines operate in the dangerous waters off the North American coasts. However, with the development of the intercontinental SLBMs it became possible for the Soviet submarines to launch their missiles from the relatively safe waters off the Kola Peninsula.¹²

In the 1970's, American ASW techniques had improved so far that the Soviet fleet could no longer operate as though the Kola were a protected bastion. American submarines, tasked to track incoming and departing Soviet boats, were operating undetected in the supposedly most highly protected waters in the immediate vicinity of Soviet SSBN facilities. The Soviets had extensive protection against air and surface attacks, but with the realization of the full extent of Western ASW technology, the Soviets determined that the waters off the Kola Peninsula were not secure enough. With that, Soviet SSBNs were deployed into the Arctic Ocean where Western ASW techniques for detecting under-ice operations were judged to be less capable.¹³ Indirectly, this change in location of SSBN operation is supported by the fact that none of the Soviet's *Delta* class submarines has been observed passing through the GIUK gap since 1975, according to US naval sources. Also, Soviet "crawlers" have been "found or suspected" to be operating in Canadian waters,¹⁴ thus raising speculation that Soviet underwater reconnaissance efforts in the Arctic waters are underway.

¹² See W. Harriet Critchley, "Polar Deployment of Soviet Submarines," *International Journal*, Vol. 39, Autumn 1984, pp. 828-865, for a history of the relationship between range capabilities of Soviet sea-launched missiles and submarine deployment locations.

¹³ Ries and Skorve, p. 28.

¹⁴ "Creepy-crawlers are tractored submarine vehicles which can be driven along the sea-bed. They have been used by the Soviet Union most noticeably in Norwegian and Swedish internal waters." Elizabeth Young, "The Control of the Conflict," in *Northern Waters*, eds. Clive Archer and David Scrivener, p.100 and fn.8, p.107.

The Soviets appear to be adapting their submarine design for just this type of environment. All of the large Soviet *Typhoon* class SSBNs are based in the Kola region and are thought to be the first submarines designed particularly for under-ice operation. These submarines exploit their design by using a technique called "ice picking" in which they quietly drift for months while resting immediately below the surface of the ice.¹⁵ In addition, the Soviets have also apparently addressed the problem of how to access the surface to fire their missiles. As noted earlier, the thinly iced openings created by separating ice packs provide access to the surface for the SSBNs, which is necessary for missile firing, but any surface activity makes them vulnerable to detection. To reduce this danger, U.S. naval reports indicate that the Soviets have developed the capability to break through several feet of ice in order to reach the surface immediately before missile firing, thus minimizing the detection time.¹⁶

CANADIAN AND AMERICAN DEFENSE PREPARATIONS

Given these significant threats posed by Soviet air and naval forces operating in the Arctic region, the question could be raised of what Canada and the United States are doing to counter these threats. In general, it appears that cooperative ventures are more firmly established to handle the air threat than the threat posed by naval forces in part because the United States and Canada hold differing perspectives on the role each should be playing in the naval area.

¹⁵ Tomas Ries, "Defending the Far North," *International Defense Review*, Volume 7, 1984, p. 875.

¹⁶ Craig Covault, "Soviet Ability to Fire Through Ice Creates New SLBM Basing Mode," *Aviation Week and Space Technology*, December 10, 1984, p. 16. There must be limits to the ice thickness against which this capability is effective, but other than allowing breaks through "several feet of ice," no exact figure is suggested.

Dealing with the Air Threat

As noted earlier, the air threat could come in the form of ICBMs and/or in long range bomber aircraft. Since the establishment of the North American Air Defense Command (NORAD) in 1957, Canada and the United States have cooperated to defend North America against this type of threat. The command was established to provide warning of a Soviet bomber attack over the Arctic. To this end, a network of 31 radars, labeled the Distant Early Warning Line (DEW Line), was built along a 3,000-mile-long band stretching from Alaska across northern Canada to Greenland.

However, as Canada and the United States were improving their defenses, the Soviet Union was also improving its offensive air capabilities. It soon became clear that the DEW Line could be underflown by Soviet aircraft, and in addition, the DEW Line was found to be ineffective against the growing Soviet ICBM threat. Given that technology did not offer a means to counter the new ICBM threat, the NORAD system was allowed to deteriorate. Even then-Secretary of Defense James Schlesinger did not offer any reason for keeping up the system: "Since we cannot defend our cities against strategic missiles, there is nothing to be gained by trying to defend them against a relatively small force of Soviet bombers."¹⁷

The result of this declining interest in air defense apparently extended into the area of missile warning. NORAD receives information on missile launches from its Ballistic Missile Early Warning System (BMEWS) which was built in the 1960s. While the system was generally judged to be reliable, a false warning of attack occurred in June 1980 which highlighted the need for the system's modernization.¹⁸ An investigation following the false warning suggested that "the decreasing

¹⁷ John Honderich, *Arctic Imperative: Is Canada Losing the North?*, University of Toronto Press, 1987, p. 104.

¹⁸ A 47-cent computer chip sent out two sets of false warnings that ground- and sea-launched intercontinental missiles were headed toward North America. (Michael Ganley, "NORAD Makes A Comeback As Soviet Strategic Threat Grows," *Armed Forces Journal International*, January 1986, p. 56)

air defense mission of NORAD, with its resultant lack of priority assignment of resources, has carried over to the missile warning function."¹⁹ Driven by the realization that the system was perhaps now more dangerous than useful in its deteriorating state, Canada and the United States have taken steps to update the entire system. The BMEWS network has been undergoing modernization since the mid-1970's²⁰ apparently designed and funded by the United States through NORAD.²¹

There is currently no defense against incoming ICBMs, only detection capability such as that provided by the BMEWS. In terms of the ICBMs, only sensors located in the Arctic region or in space would be able to track and determine impact points of the incoming missiles. If the Strategic Defense Initiative (SDI) becomes an operating system, the Arctic region could play a critical role depending upon the type of defense system selected. If the missiles were to be intercepted in mid-course, then interception weapons located on the ground would probably be located in Canada, Alaska, Greenland, or Iceland. If located on aircraft or surface ships, the interceptors would have to patrol over or on the surface of the Arctic Ocean.²² While it is very likely that the Arctic will play some role in ICBM defenses given its location, it is apparently still too early in the SDI program to do any more than speculate about the region's involvement. Canadian participation in the SDI program has already received much attention in Ottawa, and as the deployment of some type of system approaches, more controversy undoubtedly will follow. Currently, the Canadian government is not participating in the SDI program, though it will allow individual companies to contract with the United States.

¹⁹ Ganley, p. 56.

²⁰ Ganley, p. 61.

²¹ Honderich, p. 106. Honderich claimed that Canada was allowed to give little input into the BMEWS modernization.

²² If the missiles were to be targeted immediately after firing, the interception assets would have to be located in space. Or if interception was to be in the terminal phase, then the defenses would be located near likely impact points in southern Canada and the United States. (George Lindsey, "Arctic Perspectives From Different NATO Viewpoints," *NATO's Sixteen Nations*, December 1988, p. 53.)

Great attention is also being paid to managing the growing threat posed by long-range bombers carrying cruise missiles. To deal with this threat, Canada and the United States are cooperating in the North American Air Defense Modernization Program, which consists of three major sections. The first portion involves the upgrading of five interceptor bases in northern Canada. Construction on these bases is scheduled to begin in 1990 and when completed, the bases will be the forward operating locations for Canadian CF-18s, supported by U.S.-based F-15s.

The second part of the modernization effort is the construction of a new network, the North Warning System (NWS), which is to be developed in two phases, the first scheduled to be operational by 1992. The new system will consist of 13 minimally manned long range radars (11 in Canada) and 39 unmanned short range radars (36 in Canada) designed as gap-fillers between the larger systems. Canada will pay 40% of the total bill of \$1.3 billion for this new system²³ and will be the system manager and integrator of the second phase.²⁴

With this cost and responsibility sharing, Canada apparently sees the system's development as an opportunity to exert military sovereignty. Unlike the DEW Line stations, the new NWS facilities in Canada will be manned by Canadians rather than Americans. In the past, Canadians had to request permission from the United States to visit those DEW Line stations located on Canadian territory. In an additional exercise of national sovereignty, President Reagan and Prime Minister Mulroney signed an agreement in 1985 transferring control of the remaining DEW Lines stations to Canada, effective this year.²⁵

The second component of the NORAD improvement effort will involve the installation of Over-the-Horizon (OTH) radars designed to extend

²³ The entire modernization program has several components other than these mentioned here, and in total is expected to cost \$7 billion. Of that total, Canada is scheduled to pay only 12% which is related to the NWS improvements. (Ganley, p. 61.)

²⁴ Paul Mann, "New Air Defense Pact Provides Canadian Takeover of DEW Line," *Aviation Week and Space Technology*, March 25, 1985, p.24.

²⁵ *Ibid.*, p. 23.

air coverage over the Atlantic and Pacific approaches.²⁶ This \$2.3 billion system will be funded entirely by the United States, but will be partially manned by Canadians. Airborne Warning and Control (AWAC) aircraft will be used to fill gaps or thicken coverage in the system, and while the aircraft will be U.S.-owned, Canadian crews are supposed to be trained for AWACs flights.²⁷

In 1986, the United States announced a new research program which is designed to complement the above-mentioned improvements. When fielded, the NWS and the OTH radars will improve North American air defense capability, but the systems will still have weaknesses. In particular, they do not track cruise missiles or aircraft once they have moved their area of coverage.²⁸ The proposed Air Defense Initiative (ADI) would rely upon a space-based surveillance and tracking system to complete the coverage. Canadian participation in the ADI project was being sought and apparently, Canadian research efforts in the area are being funded.²⁹

Dealing with the Surface and Subsurface Naval Threat

Addressing the surface and subsurface threat to North America is particularly difficult for the United States and Canada because there is not full agreement on the issue areas. The United States views the Arctic waters from purely a security issue. However, while Canada shares that concern over security problems, the Canadian government also views those waters from a sovereignty perspective.

The difference between these positions became most pronounced with the voyage of the American ship *Polar Sea* which moved through the Northwest Passage in 1985. The United States had consulted and informed the Canadian government of the *Polar Sea's* plans, but did not receive

²⁶ The OTH systems cannot operate in northern Canada due to the electromagnetic disturbances caused by the Aurora Borealis.

²⁷ *Challenge and Commitment: A Defense Policy for Canada*, Minister of Supply and Services, Ottawa, Canada, 1987, p. 56.

²⁸ David J. Lynch, "U.S. Considers Air Defense Shield," *Defense Week*, June 23, 1986, p. 1.

²⁹ David J. Lynch, "Canadians Say Talks with US on Air Defense Initiate Role Moving Slowly," *Defense Week*, October 13, 1987, p. 1.

Canadian approval before moving into the Passage. Canadians saw this voyage as a clear affront to their claim of national sovereignty over the waters of the Passage; so much so that then-Secretary of State for External Affairs, Joe Clark, issued a statement in September 1985 clarifying the government's policy on Canadian sovereignty over the Passage:

Canada is an Arctic nation. The international community has long recognized that the Arctic mainland and islands are part of Canada like any other, but the Arctic is not only a part of Canada, it is a part of Canadian greatness. ... Canada's sovereignty in the Arctic is indivisible. It embraces land, sea, and air. It extends without interruption to the seaward-facing coasts of the Arctic islands. These islands are joined, and not divided, by the waters between them. They are bridged for most of the year by ice. ... The policy of the Government is to maintain the natural unity of the Canadian Arctic archipelago and to preserve Canada's sovereignty over land, sea, and ice undiminished and undivided.³⁰

By contrast, the American position was that the Passage was an international waterway and, as such, transit could not be restricted by the bordering country. The position of the United States on this issue is hardly surprising given the implications of resolving the issue one way or the other. If the United States agrees with Canada that the Passage is indeed a national waterway under the jurisdiction of the Canadians, then the freedom of movement of U.S. naval forces could be restricted or even denied, and of equal concern, those movements which are usually very tightly held due to security concerns, would be more widely known. However, if the Canadians and Americans come to the agreement that the Passage is an international waterway, then any nation's vessels could move through those waters. This probability raises concern to Americans because Soviet vessels (attack submarines, surface vessels, and ASW aircraft) would be allowed unimpeded access to those waters. That would clearly be a situation which would worry North

³⁰ Franklyn Griffins (ed.), *Politics of the Northwest Passage*, 1987, "Statement on Sovereignty," 10 September 1985, pp.270-271.

American defense planners since the air defense stations run parallel to the Passage and at some points the air defense line is on the Passage.³¹

National Attention to the Subsurface Threat--The United States

An increasing amount of attention is being given to the growing number of Soviet submarines and their capabilities. In the past, the U.S. Navy has relied upon superior capabilities as a balance against the greater number of noisier Soviet submarines, but many in the Pentagon and in Congress do not feel that the United States has the qualitative edge any longer. In a report recently released by a House Armed Services advisory panel, the committee chairman Representative Les Aspin warned that "the Soviets have started to construct submarines quiet enough to present a 'major technological challenge with profound national security implications to the United States.'"³² About one-quarter of the Navy's research budget goes to ASW research; however, according to the panel, "what is needed is not simply more money and harder work," but rather, a new approach to research with longer-term developments in mind, instead of its narrow, near term focus on technology research.³³

While the need for improvements in ASW is becoming increasingly clear, the correct course to take is uncertain since "there is no single system that is a panacea."³⁴ Air, surface and subsurface vessels are all involved, each utilizing techniques such as passive and active detection and magnetic anomaly detectors. The Navy is claiming that the new attack submarine *Seawolf* will go a long way towards addressing the ASW challenge, but at \$1.5 billion each,³⁵ few will probably be bought thus raising the problem of overextending the Navy's limited, though presently technically-capable assets.

³¹ Ibid., p. 10.

³² Clarent A. Robinson, Jr., "Soviet Subs Gain Quiet, Sleek Edge Over U.S.," *Washington Times*, March 21, 1989, p.1.

³³ George C. Wilson, "Navy Urged to Focus on Long-Term Soviet Sub Threat," *Washington Post*, March 23, 1989, p. 12.

³⁴ Bruce D. Nordwall, "U.S. Navy Debates How to Meet ASW Needs with Tighter Budgets," *Aviation Week and Space Technology*, February 27, 1989, p. 51.

³⁵ Wilson, p. 12.

The detection of Soviet submarines is only a part of the Navy's mission, and as the quantity and quality of Soviet submarines improves, adhering to the Navy's missions as required under maritime strategy becomes much more difficult, particularly in the Arctic waters. The Navy's strategy calls for its forces to deploy as far forward as possible in order to keep the enemy vessels contained in as small an area as possible. In the case of the Arctic, the hope would be that Soviet submarines could be contained in those waters. To this end, the *Los Angeles*-class submarines are being modified for under-ice operations and there are later plans for the construction of a new boat with improved noise reduction capabilities, improved sensors, and better under-ice operating capability.¹⁶

National Attention to the Subsurface Threat--Canada

After a long period of neglect, the Canadian defense forces are now supposed to be undergoing a major modernization program and heading the improvements list are assets needed to address the growing Arctic threat. Canada has long been criticized by the United States and other NATO allies for not carrying her fair share of the mutual defense burden. The most frequently cited proof of this is that, of the NATO alliance members, only Luxembourg and Denmark have smaller ratios of defense expenditures to GNP.¹⁷ Despite these low outlays, Canada still had defense commitments to NATO's central region and a deployment commitment into Norway, plus various peacekeeping missions around the world, and finally, of course, Canada has the commitment to defend its own national territory.

When Prime Minister Mulroney came into office in 1984, he called for a review of the nation's military responsibilities at which point, the gap between resources and commitment became quite clear.

¹⁶ Nick Childs and Antony Preston, "Submarine Developments: World-Wide View," *Jane's Defense Weekly*, August 18, 1984, p. 233.

¹⁷ *Military Balance, 1988-89*, International Institute for Strategic Studies, London, p. 224. In 1986, the ratio of defense to GNP were as follows: Canada, 2.2%; Denmark, 2.0%; and Luxembourg, 1.0%. In 1984, only Luxembourg was lower: Canada, 2.2% and Luxembourg, 1.0%.

Complicating this problem of overextension of the Canadian forces, the review discovered the low defense budget levels of earlier years³⁸ had taken their toll on equipment. Force modernization had almost ground to a halt thus presenting the Canadian forces with the problem of "rust out;" that is, equipment aging without being replaced. For example, in 1963 there were 45 major warships and 10 minesweepers in commission. Now, the number of warships has fallen over 40% to 26 and there are no minesweepers in the current force.³⁹ The situation was so bleak as to be almost comical if not so potentially dangerous: "Some of the destroyers are so ancient that vacuum tubes for their antique electronics must be imported from - of all places - the Soviet Union."⁴⁰

After several years, the end product of the government's review was the Defense White Paper, published in June 1987. This was the first official general defense planning document to come out of Ottawa since 1971. The 1987 document called for the government to scale back its commitments while increasing funding support for those it considers as vital. The major change in commitments was the withdrawal of Canada's promise to reinforce northern Norway, with a few forces being added to its in-place Central European ground forces. Coupled with this scaled-back mission list, the White Paper also called for a real increase in defense spending of 2% over the next 15 years. Of the three military services, the Maritime Forces stood to gain the most from these increased defense expenditures with the White Paper calling for the purchase of six antisubmarine frigates and 10 to 12 nuclear submarines.⁴¹ The \$2.5 billion needed for the frigates has been approved, but, as will be discussed below, the prospects for approval of the submarine acquisition plan quickly became less certain.

³⁸ For example, in the early 1960's about 20% of the defense budget was spent on new equipment, but by 1972, that figure had fallen to only 9%. It was not until 1982 that the figure rose back over 20%. In contrast, in 1985, the NATO countries spent an average of 25% on capital expenditures. *Challenge and Commitment: A Defense Policy for Canada*, p. 43.

³⁹ Ibid., p. 44.

⁴⁰ Eric S. Margolis, "Canada's Long Climb," *Military Logistics Forum*, January/February 1985, Volume 1, No. 3, p. 72.

⁴¹ David Pugliese, "Canada OK's First Program Funds," *Armed Forces Journal*, February 1988, p. 34.

Submarine Acquisition

The most controversial component of the new military force buildup was the acquisition of nuclear submarines for the Canadian Maritime Forces. The plan outlined in the White Paper was for the Maritime forces to acquire 10 to 12 nuclear submarines over the next 25 years, with cost estimates ranging from C\$5 to C\$8 billion.⁴² The SSNs were to be either the British Trafalgar-class or the French Rubis-class, with the British submarine estimated to cost \$500 million each and the smaller French boat estimated at \$350 million each. If Canada decided to purchase the British submarine, the United States would have had to support the sale due to a 1958 agreement between the United States and Britain requiring approval of technology transfers. Approval appeared likely given President Reagan's promise of support for the transfer at a United States-Canada summit last year.⁴³

The predicted high costs of this submarine program led many Canadians and Americans to argue against the acquisition plan stating that such a large amount of money could be better spent in other defense and non-defense areas. The United States has long been encouraging Canada to raise its defense expenditures, but increasing the Canadian defense budget to allow for the acquisition of these submarines was clearly not desired by the Pentagon. Canada was receiving pressure from the U.S. Congress to drop the plan because "there is no need for Canada to perform submarine patrol in the Arctic, where the United States already has considerable experience."⁴⁴ In addition, both Canadians and Americans were asking what the submarines will do if they actually locate an intruder in the Canadian waters; surely the foreign boat

⁴² Critics of the program suggested that the cost estimates were low and that they did not include outlays for the construction of the necessary shore infrastructure, crew training, nuclear fuel, and upgrading of the hulls for Arctic under-ice operations. ("Fleet of A-Subs Likely to Cost Over \$8 Billion, Study Says," *Toronto Globe and Mail*, January 16, 1987, p. 1.)

⁴³ "Canadian Decision on Nuclear Submarine May Not Come Until 1989," *Defense Week*, August 15, 1988, p. 14.

⁴⁴ "No Need For Sub Plan, US Congressman Says," *Toronto Globe and Mail*, November 28, 1987, p. A5.

(American or Soviet) will not be engaged by the Canadian vessel. Thus if the mission of these submarines was simply to be the monitoring of subsurface movements in an exercise of sovereign control over national waters, there are cheaper ways to accomplish this task. Instead, Americans and many Canadians argued for defense expenditures in other conventional force areas. Finally, as in the process of setting the American defense budget, there were those who lobbied for spending the money on domestic social programs instead of defense.

If Prime Minister Mulroney had not been reelected, the submarines would surely have been immediately cancelled, but even with Mulroney's return to office, their acquisition was still not certain. During last fall's campaign, Mulroney was pressured to focus on controlling the country's \$28 billion deficit and on social programs such as a national childcare program designated for activation this year⁴⁵ and apparently, he did not defend the submarine acquisition program during the campaign.⁴⁶

In January, Mulroney reshuffled his cabinet and moved defense minister Perrin Beatty, the primary backer of the submarine acquisition program, to the health ministry. Mulroney was apparently still committed to the submarine program but at the same time had promised that the program would be reexamined in light of competing fiscal pressures.⁴⁷ This reexamination eventually led to the program's cancellation. When Finance Minister Michael Wilson submitted the 1990 fiscal year budget on April 27, the submarine plan had been cut. As a result of these cuts, the average 6% growth rate of the defense budget from 1985 to 1989 had been reduced to only 1.2%.⁴⁸ Obviously, with such low growth in defense expenditures, Canada will have to readdress many of the objectives laid out in the White Paper due to lack of funding.

⁴⁵ "Fiscal Realities Replace Liberal Party as Main Threat to Canadian Buildup," *Armed Forces Journal*, January 1989, p. 40.

⁴⁶ Herbert H. Denton, "Mulroney Signals Shift in Sub Plan," *Washington Post*, 31 January 1989, p. 21.

⁴⁷ Ibid.

⁴⁸ In addition to the submarines, funding cuts or reductions involved the following: closure of seven of 45 military bases, reduced operations in seven others, and slowed purchase of light armored and all-terrain vehicles, tanks, and communication systems. "Canada Canceling Plan to Purchase Atom Submarines," *New York Times*, 28 April 1989, p. 1.

COOPERATION ON THE ARCTIC

Given this overview of the pressures facing each nation as it separately addresses the growing threat in the Arctic waters, it seems logical to examine the areas of cooperation. Canadian and American cooperation on North American defense issues is now managed through two separate groups. The first, the Canada-United States Regional Planning Group, is part of overall NATO structure and it operates separately from the other three commands making up the alliance (the European, Atlantic and Channel Commands.) The Group's meetings alternate between the two countries as it "develops and recommends to the (NATO) Military Committee plan for the defence (sic) of the Canada-United States region."⁴⁹ In the event of war, forces operating in the Arctic area would fall under the command of the Supreme Allied Commander Atlantic (an American). Through this command, the Canadians and Americans train bilaterally for operations in the Arctic.

In addition to the Planning Group, the United States and Canada cooperate bilaterally through the Permanent Joint Board on Defense consisting of both military and political representatives tasked to address joint problems facing North America. To that end, for example, the Board organized NORAD. Recently, the focus has been on research and development with recommendations coming from the Board's Military Coordination Committee.

Given these two existing structures there should be some options for organizing a cooperative effort toward the development of a joint security policy in the Arctic. As with any security policy, two parts must be present: monitoring of the potential enemy's movements and operational plans for engagement. The Canada-United States Regional Planning Group has made provisions for the latter through the Canada-United States Basic Security Plan; however, there is no joint monitoring mechanism. This paper argues for the establishment of such a mechanism.

⁴⁹ *Facts and Figures: The North Atlantic Treaty Organization*, NATO Information Service, p. 111.

The question could surely be asked of why such an effort needs to be a cooperative venture between the United States and Canada, rather than simply a national effort. As is often the case with cooperative ventures, a critical motivator is money; that is, without access to more than one resource pool, the problem could still be addressed, but with perhaps less than full attention. In this particular case, the United States or Canada could certainly field sufficient assets to monitor the Soviet movements, but the cost burden could be unbearable, as shown by the Canadian effort to field a small submarine force, which would only provide very superficial coverage of the area. The recent pressure in Washington is to cut the defense budget rather than recommend growth in one of the most technologically expensive areas.

As outlined earlier, the undersea threat posed by the submarines based on the Kola Peninsula appears to be growing, but both American and Canadian defense budgets have little room, if any, to singlehandedly face this growing challenge. The simple facts are that the Americans hold the submarines necessary for under-ice detection of intruders, and following the cancellation of the Canadian submarine program, the United States continues to hold the only assets. Similarly, while the United States has the technology needed for under-ice operations, the Arctic Ocean is clearly not the only body of water with which the U.S. Navy must concern itself, thus resulting in a further extension of what is expected by many to soon be insufficient naval assets.

Instead of each nation attempting to unilaterally keep up with the growing threat, Canada and the United States should work together so that subsurface monitoring is accomplished by the sharing of research and development costs as is proposed under the Air Defense Initiative, and by the sharing of manpower and equipment costs as is being done under the North Warning System. For both countries, competing fiscal pressures coupled with a realization of the necessity of monitoring make this a reasonable option. However, many obstacles stand in the way of such cooperation. In the United States, a central problem will be how to overcome the U.S. Navy's reluctance to share information on ASW technologies and techniques. Also, since Canada is unlikely to have the

technology or finances necessary to "go it alone" in the Arctic, some sovereignty concessions will have to be made. Both these problems present themselves as major obstacles, but with the realization of the fast growth of the threat in the Arctic region, it becomes obvious that it is essential to overcome these obstacles to allow for cooperation in the near term to insure security in the Arctic.

There is much talk all around the Arctic about demilitarizing the region.⁵⁰ As long ago as the early 1970's, the Soviet Union and Canada signed formal agreements establishing an institutional framework for cooperation in non-military areas such as the environment and economics. While such agreements can certainly benefit both sides, the Canadians realize that Soviet interests probably extend past the non-military arena: "In the case of Arctic relations with Canada, the Soviet Union is undoubtedly hoping that cooperation in non-military areas will have an impact on furthering its proposals for demilitarization of the Arctic."⁵¹ Canadians should realize that whether or not these demilitarization efforts are successful (and Canadians should certainly keep in mind the buildup of Soviet submarine forces before they judge Soviet intentions in the region), monitoring of activity within the region will still be necessary, and that is a task that neither Canada nor the United States can afford to undertake alone. It is hoped that the incentives for a cooperative venture in undersea monitoring will be recognized soon enough to insure that planning for the region's future can be addressed in a stable environment in which all the players' capabilities and intentions can be recognized.

⁵⁰ One suggestion was to turn it over to the United Nations to manage. (Clyde Sanger, "Give the UN Some Territory to Run," *Peace and Security*, Summer 1988, Volume 3, Number 2, p.8.)

⁵¹ John Hannigan, "New Dimensions in Canadian-Soviet Arctic Relations," Canadian Institute for International Peace and Security, Points of View Number 6, November 1988, p. 5.

BIBLIOGRAPHY

"Canada, After Losing Eight, Withdraws From Exercise," *Washington Times*, 31 January 1989, p. 6.

"Canada Canceling Plan to Purchase Atom Submarines," *New York Times*, April 28, 1989, p. 1.

"Canadian Decision on Nuclear Submarine May Not Come Until 1989," *Defense Week*, August 15, 1988, p. 14.

Challenge and Commitment: A Defense Policy for Canada, Minister of Supply and Services, Ottawa, Canada, 1987.

Childs, Nick, and Antony Preston, "Submarine Developments: World Wide View," *Jane's Defense Weekly*, August 18, 1984, pp. 232-239.

Covault, Craig, "Soviet Ability to Fire Through Ice Creates New SLBM Basing Mode," *Aviation Week and Space Technology*, December 10, 1984, pp. 16-17.

Critchley, W. Harriet, "Polar Deployment of Soviet Submarines," *International Journal*, Vol. 39, Autumn 1984, pp. 828-865.

Denton, Herbert H., "Mulroney Signals Shift in Sub Plan," *Washington Post*, 31 January 1989, p. 21.

Egan, Dennis M., and David W. Orr, "Sea Control in the Arctic: A Soviet Perspective," *Naval War College Review*, Winter 1988, pp. 51-80.

Facts and Figures: The North Atlantic Treaty Organization, NATO Information Service, Brussels, 1981.

"Fiscal Realities Replace Liberal Party as Main Threat to Canadian Buildup," *Armed Forces Journal*, January 1989, p. 40.

"Fleet of A-Subs Likely to Cost Over \$8 Billion, Study Says," *Toronto Globe and Mail*, January 16, 1987, p. 1.

Ganley, Michael, "NORAD Makes A Comeback As Soviet Strategic Threat Grows," *Armed Forces Journal International*, January 1986, pp. 56-62.

Griffins, Franklyn (ed.), *Politics of the Northwest Passage*, 1987, "Statement on Sovereignty," 10 September 1985, pp. 270-271.

Hannigan, John, "New Dimensions in Canadian-Soviet Arctic Relations," *Canadian Institute for International Peace and Security, Points of View* Number 6, November 1988.

- Honderich, John, *Arctic Imperative: Is Canada Losing the North?*, University of Toronto Press, 1987.
- Isherwood, Julian, "Norwegians Eyeing Soviet Naval Buildup in Kola Region," *Armed Forces Journal*, March 1989, p. 44.
- Le Marchand, T. M., "Under Ice Operations," *Naval War College Review*, May-June 1985, pp. 19-27.
- Lindsey, George, "Arctic Perspectives From Different NATO Viewpoints," *NATO's Sixteen Nations*, December 1988, pp. 52-54.
- Lynch, David J., "Canadians Say Talks with U.S. on Air Defense Initiate Role Moving Slowly," *Defense Week*, October 13, 1987, p. 1.
- Lynch, David J., "U.S. Considers Air Defense Shield," *Defense Week*, June 23, 1986, p. 1.
- Mann, Paul, "New Air Defense Pact Provides Canadian Takeover of DEW Line," *Aviation Week and Space Technology*, March 25, 1985, pp. 23-24.
- Margolis, Eric S., "Canada's Long Climb," *Military Logistics Forum*, January/February 1985, Volume 1, No. 3, pp. 70-73.
- Military Balance, 1988-89*, International Institute for Strategic Studies, London, p. 224.
- "No Need For Sub Plan, U.S. Congressman Says," *Toronto Globe and Mail*, November 28, 1987, p. A5.
- Nordwall, Bruce D., "U.S. Navy Debates How to Meet ASW Needs with Tighter Budgets," *Aviation Week and Space Technology*, February 27, 1989, pp. 50-54.
- Petersen, Charles C., "Soviet Military Objectives in the Arctic Theater," *Naval War College Review*, Autumn 1987, pp. 3-22.
- Pugliese, David, "Canada OK's First Program Funds," *Armed Forces Journal*, February 1988, p. 34.
- Ries, Tomas, "Defending the Far North," *International Defense Review*, Volume 7, 1984, pp. 873-880.
- Ries, Tomas, and Johnny Skorge, *Investigating Kola: A Study of Military Bases Using Satellite Photography*, Brassey's Defense Publishers, 1987, p. 3.
- Robinson, Clarent A., Jr., "Soviet Subs Gain Quiet, Sleek Edge Over U.S.," *Washington Times*, March 21, 1989, p. 1.

Sanger, Clyde, "Give the UN Some Territory to Run," *Peace and Security*, Canadian Institute for International Peace and Security, Summer 1988, Volume 3, Number 2, pp. 8-9.

Wilson, George C., "Navy Urged to Focus on Long-Term Soviet Sub Threat," *Washington Post*, March 23, 1989, p. 12.

Young, Elizabeth, "The Control of the Conflict," in Archer, Clive and David Scrivener (eds.), *Northern Waters*, Barnes and Noble Books, 1986.

Young, Oran R., "The Age of the Arctic," *Foreign Policy*, 1985-86, Volume 61, pp. 160-179.